Digital Authentication with Digital and Analog Documents

Abstract of the Disclosure

A watermark embedder transforms a media signal from its perceptual domain to frequency domain regions and embeds a hash of data from one frequency domain region into a watermark in another frequency domain region. Alternatively, it encodes instances of the same message into the frequency domain regions. To detect alteration of the media signal, a watermark decoder transforms a suspect signal into the frequency domain regions, extracts the watermark message from a first frequency domain region and compares it with a reference derived from another frequency domain region. The reference signal is either a hash computed from the other frequency domain region of the watermarked signal, or another instance of the same message embedded into the other frequency domain region. The decoder can be used to detect alteration of the signal, such as alteration that occurs with reproduction (printing, scanning, copying, D/A-A/D conversion, etc.), compression, cropping or swapping of media signal content, etc.